Service Manual

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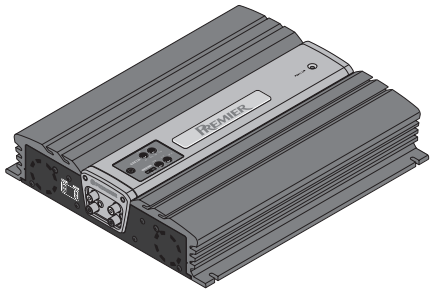

ORDER NO.
CRT2187

BRIDGEABLE POWER AMPLIFIER

GM-X822 X1R/UC
GM-X722 X1R/UC,ES,EW

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PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS SERVICE INC. P.O.Box 1760, Long Beach, CA 90801-1760 U.S.A.
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE, PTE.LTD. 501 Orchard Road, #10-00, Wheelock Place, Singapore 238880

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1. SAFETY INFORMATION

UC model

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty.
If you are not qualified to perform the repair of this product properly and safely; you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5). When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING

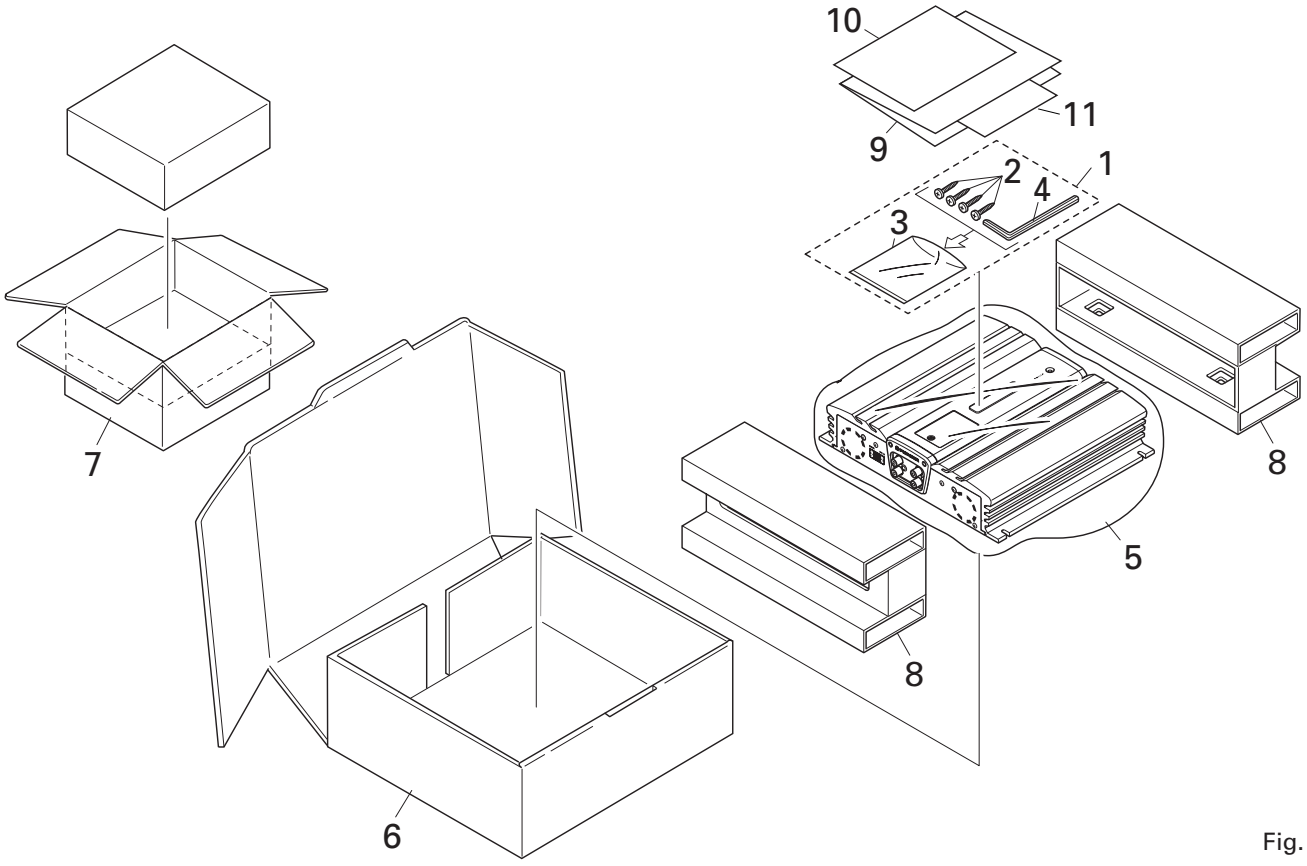


Fig. 1

NOTE:

● Parts marked by "*"are generally unavailable because they are not in our Master Spare Parts List.

● Screws adjacent to ∇ mark on the product are used for disassembly.

● PACKING SECTION PARTS LIST

Mark	No.	Description	Part No.			
			GM-X822	GM-X722		
			X1R/UC	X1R/UC	X1R/ES	X1R/EW
*	1	Screw Assy	HEA0044	HEA0044	HEA0044	HEA0044
	2	Screw(x4)	BYC40P180FZK	BYC40P180FZK	BYC40P180FZK	BYC40P180FZK
	3	Polyethylene Bag	HEG0011	HEG0011	HEG0011	HEG0011
	4	Wrench	HLP0001	HLP0001	HLP0001	HLP0001
	5	Polyethylene Bag	HEG0013	HEG0013	HEG0013	HEG0013
	6	Carton	HHG0164	HHG0165	HHG0166	HHG0167
	7	Contain Box	HHL0164	HHL0165	HHL0166	HHL0167
	8	Protector(x2)	HHP0025	HHP0025	HHP0025	HHP0025
	9-1	Owner's Manual	HRD0060	HRD0061	HRD0062	HRD0063
	9-2	Owner's Manual	Not used	Not used	HRD0069	Not used
	10	Warranty Card	*HRY1070	Not used	Not used	HRY1087
	11	Card	Not used	ARY1048	Not used	Not used

● Owner's Manual

Model	Part No.	Language
GM-X822/X1R/UC	HRD0060	English, French
GM-X722/X1R/UC	HRD0061	English, French
GM-X722/X1R/ES	HRD0062	English, Spanish
	HRD0069	Arabic, Portuguese(B)
GM-X722/X1R/EW	HRD0063	English, French, German, Dutch, Spanish, Italian

2.2 EXTERIOR

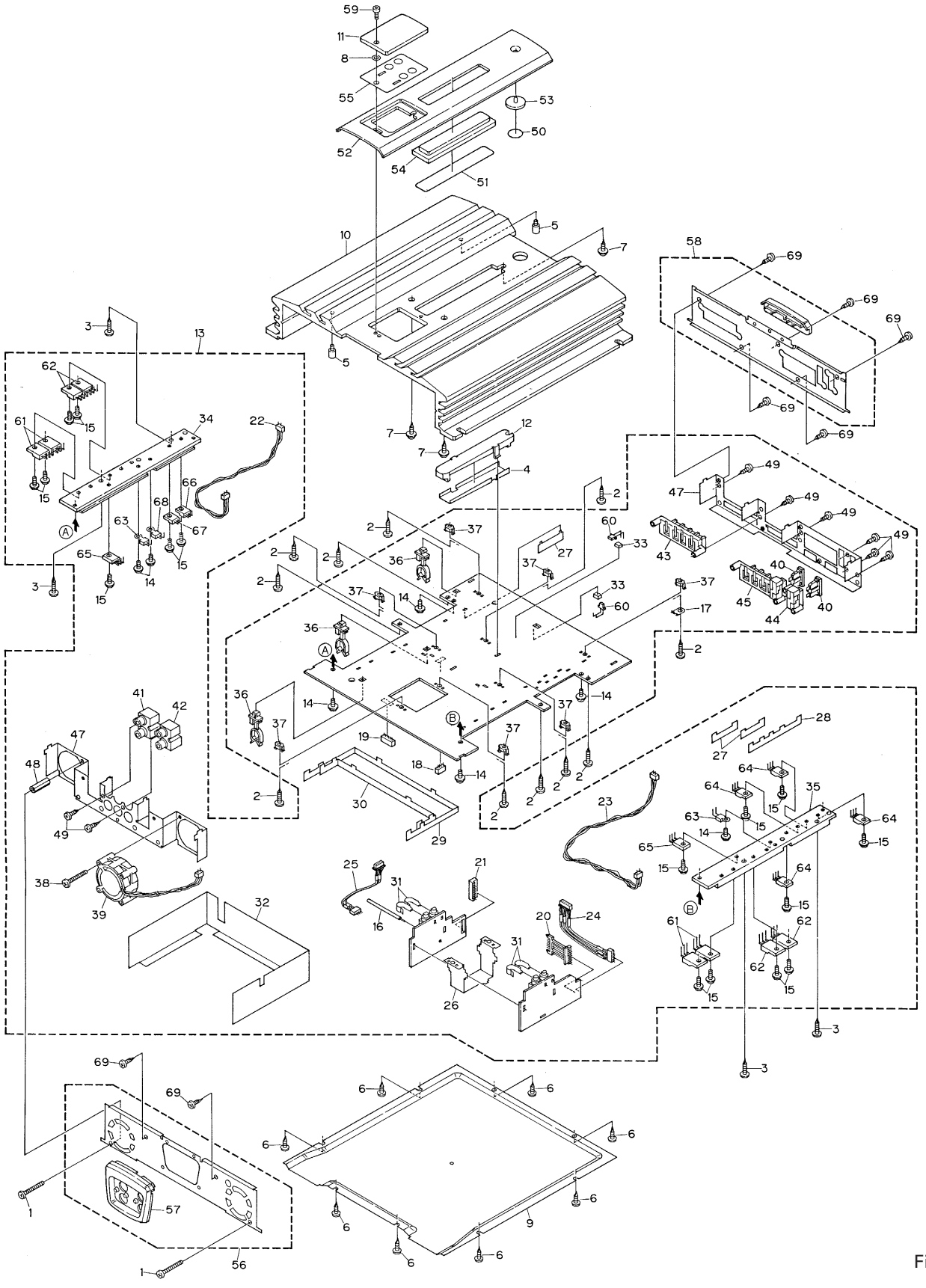


Fig. 2

(1) EXTERIOR SECTION PARTS LIST

Mark No.	Description	Part No.
1	Screw	BMZ30P250FZK
2	Screw(M3x12)	CBA1323
3	Screw(M3x14)	CBA1382
4	Sheet	CNM5854
5	Screw	HBA0006
6	Screw	HBA0011
7	Screw	HBA0012
8	Washer	HBF0005
9	Case	HNB0037
10	Heat Sink	HNR0078
11	Window	HNS0053
12	Lighting Conductor	HNV0013
13	Amp Unit	See Contrast table(2)
14	Screw	BMS30P060FZK
15	Screw	BMS30P080FMC
16	Clamper	CEF1009
17	Terminal(CN904)	CKF1059
18	Plug(CN551)	CKS1037
19	Plug(CN501)	CKS1039
20	Connector(CN503)	CKS3799
21	Connector(CN552)	CKS3800
22	Cord(CN153)	HDE5500
23	Cord(CN253)	HDE5500
24	Cord(CN502)	HDE5501
25	Cord(CN553)	HDE5502
26	Holder	HNC0029
27	Buss Bar	HNC0043
28	Buss Bar	HNC0045
29	Buss Bar	HNC0051
30	Buss Bar	HNC0053
31	Clip	HNC0054
32	Separator	HNM0047
33	Spacer	See Contrast table(2)
34	Heat Sink	HNR0081
35	Heat Sink	HNR0082

Mark No.	Description	Part No.
36	Clamper	HNV0015
37	Spacer	HNV3975
38	Screw	BMZ30P250FZK
39	Fan Motor	CXM1102
40	Fuse(20A)	HEK0020
41	Pin Jack(CN801)	HKB0002
42	Pin Jack(CN851)	HKB0002
43	Terminal(CN101)	HKE0010
44	Fuse Holder(CN902)	HKE0012
45	Terminal(CN901)	HKE0014
46	Holder	HNC0027
47	Holder	HNC0028
48	Spacer	HNV0010
49	Screw	PPZ30P060FZK
50	Film	See Contrast table(2)
51	Film	See Contrast table(2)
52	Plate Unit	See Contrast table(2)
53	Light Pipe Unit	HXA0201
54	Plate Unit	See Contrast table(2)
55	Sheet Unit	See Contrast table(2)
56	Panel Unit	See Contrast table(2)
57	Plate	HNS0066
58	Panel Unit	See Contrast table(2)
59	Screw	SMZ30H080FCR
60	LED(D902,903)	See Contrast table(2))
61	Transistor(Q113,114,213,214)	2SC5099
62	Transistor(Q115,116,215,216)	2SA1907
63	Thermistor(TH651,652)	CCX1013
64	FET(Q963-966)	IRFIZ44N
65	Transistor(Q107,207)	2SC1568
66	Diode(D961)	FML22S
67	Diode(D962)	FML22R
68	Thermistor(TH901)	CCX1027
69	Screw	BSZ30P050FZK

(2) CONTRAST TABLE

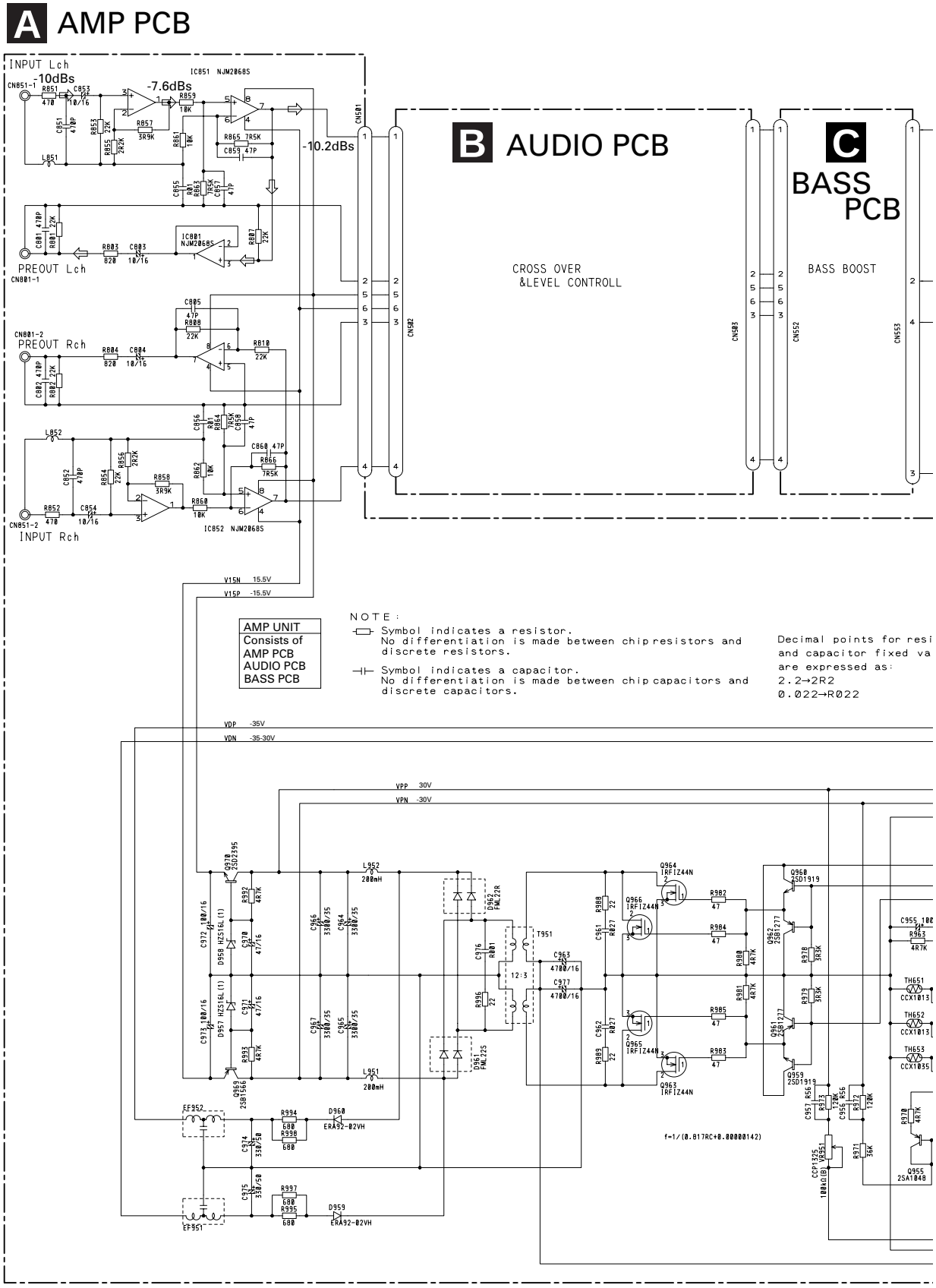
GM-X822/X1R/UC, GM-X722/X1R/UC, GM-X722/X1R/ES and GM-X722/X1R/EW are constructed the same except for the following:

Mark	No.	Symbol and Description	Part No.			
			GM-X822	GM-X722		
			X1R/UC	X1R/UC	X1R/ES	X1R/EW
	13	Amp Unit	HWH0075	HWH0076	HWH0074	HWH0073
	33	Spacer	HNM0053(x2)	HNM0053(x2)	HNM0053(x1)	HNM0053(x2)
	50	Film	CNM5856	Not used	Not used	Not used
	51	Film	CNM5855	Not used	Not used	Not used
	52	Plate Unit	HXA0115	HXA0111	HXA0111	HXA0111
	54	Plate Unit	HXA0206	HXA0203	HXA0203	HXA0203
	55	Sheet Unit	HXA0266	HXA0126	HXA0118	HXA0118
	56	Panel Unit	HXA0270	HXA0271	HXA0271	HXA0271
	58	Panel Unit	HXA0273	HXA0272	HXA0272	HXA0272
	60	LED(D902,903)	NSPWF50S(AQ)	NSPWF50S(VQ)	NSPWF50S(VQ)	NSPWF50S(VQ)

3. SCHEMATIC DIAGRAM

3.1 AMP UNIT

Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".



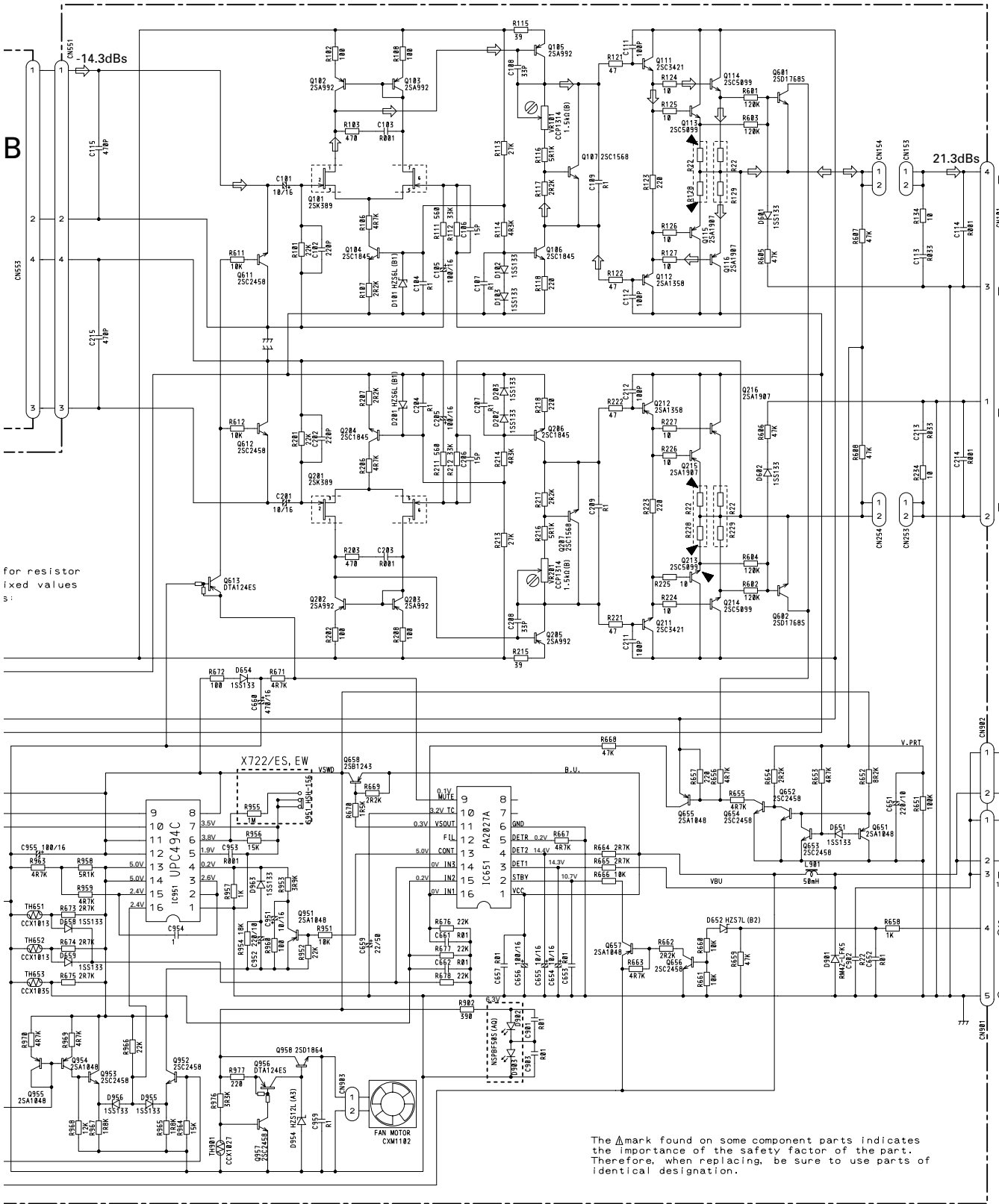

-14.3dBs
21.3dBs
L+
L-
R+
R-
X722/ES, EW
IC651 PA2027A
IC951 UPC494C
SYSTEM CONTROL
POWER 14.4V
FAN MOTOR CXM1102
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Fig. 3

3.2 AUDIO PCB AND BASS PCB

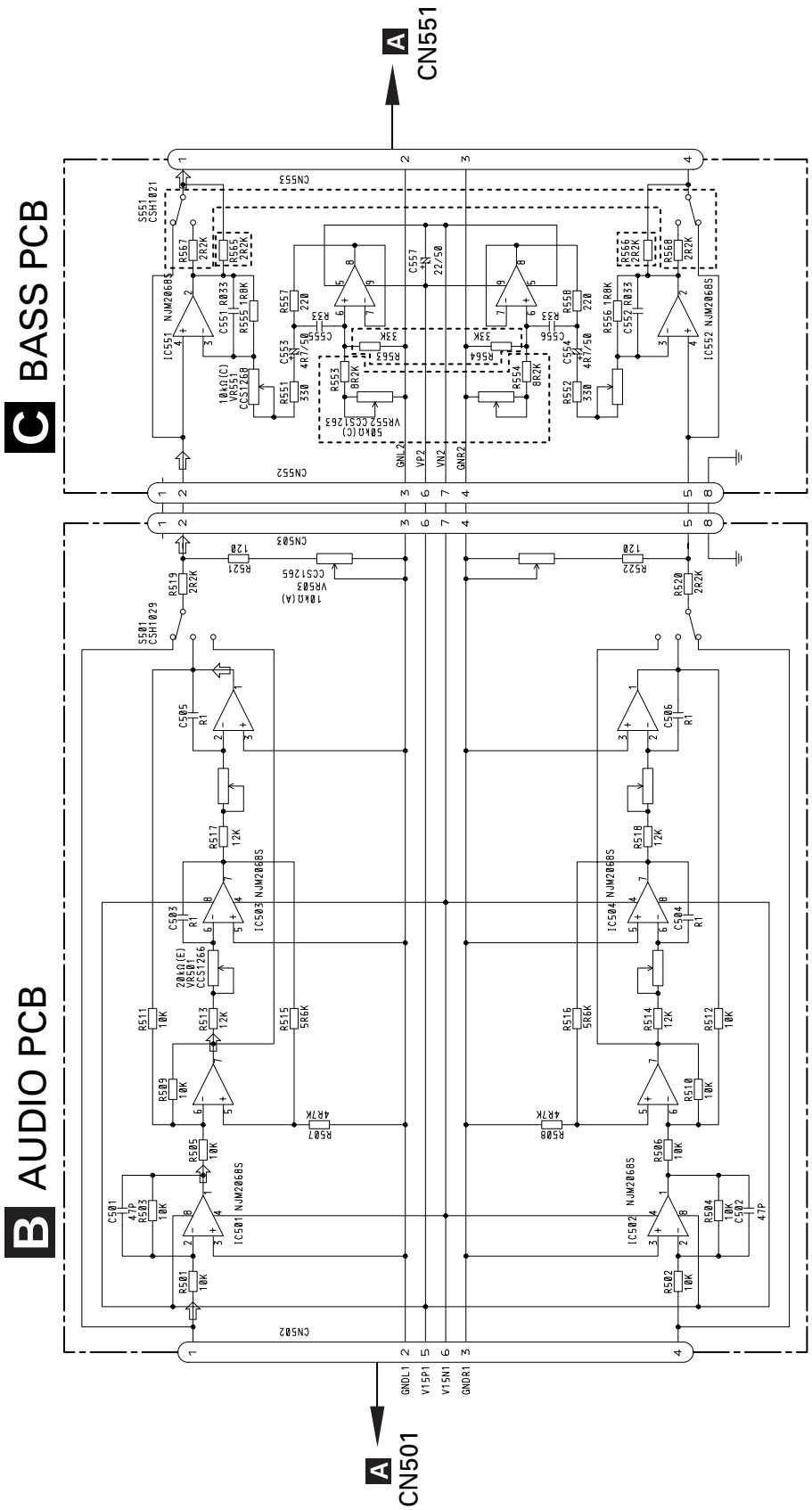


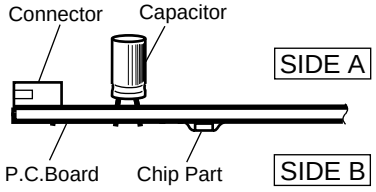
Fig. 4

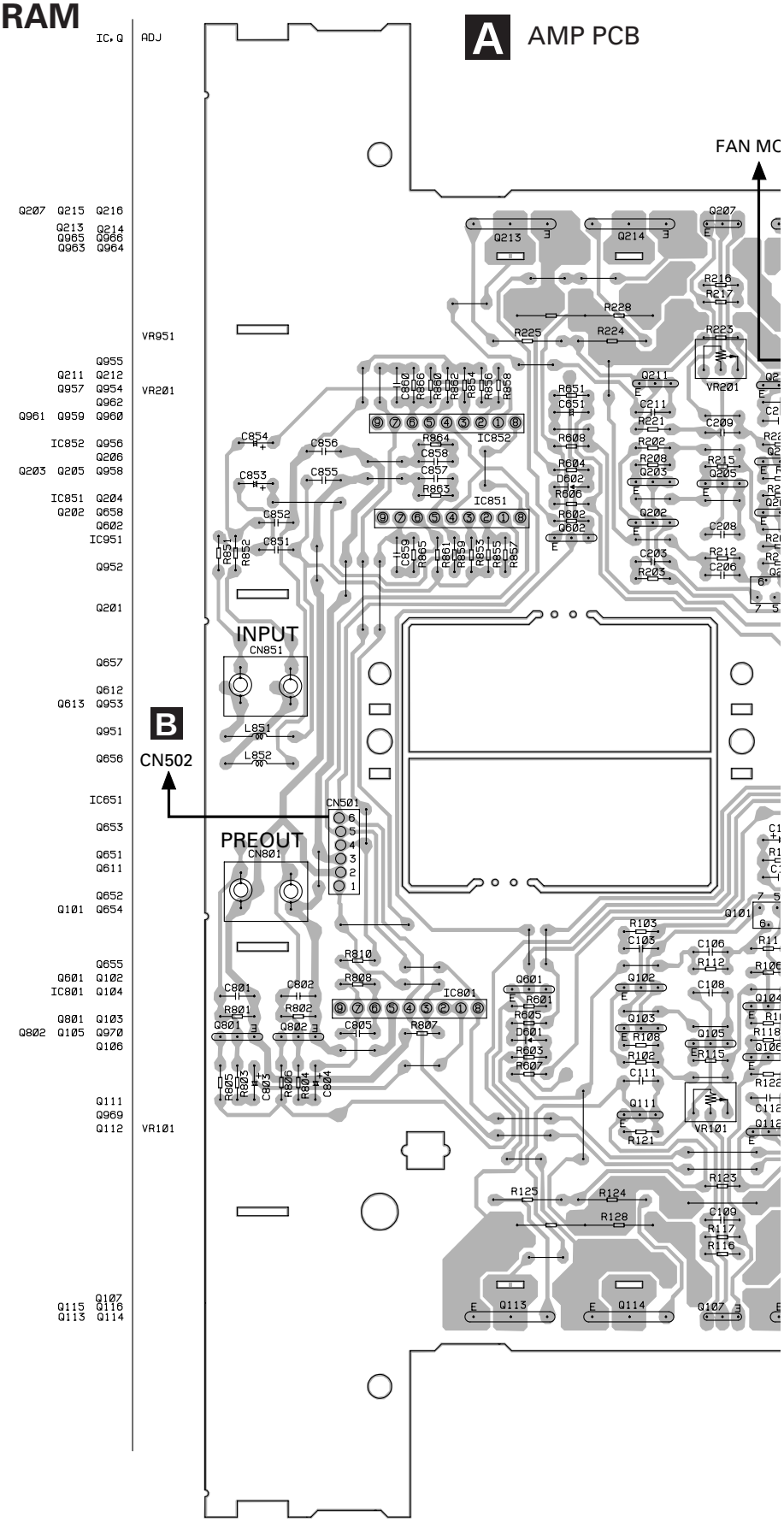
4. PCB CONNECTION DIAGRAM

4.1 AMP UNIT

NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams





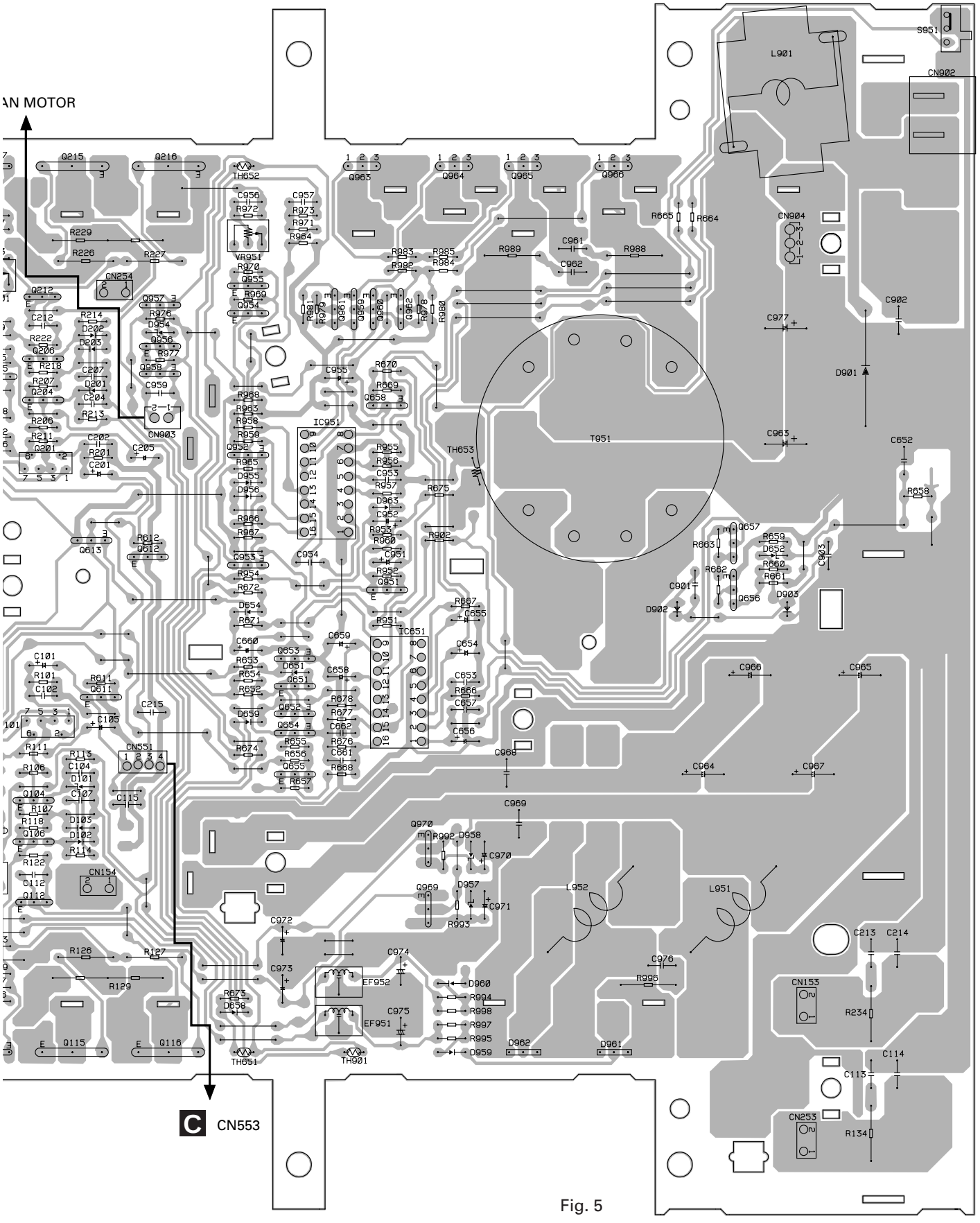

AN MOTOR
C CN553
S951
L901
CN902
CN904
C902
D901
T951
C963
C652
R658
C977
R665
R664
R988
R989
C961
C962
R983
R985
R984
R982
Q963
Q964
Q965
Q966
TH652
VR951
Q215
Q216
R229
R226
R227
CN254
Q212
C212
R214
D202
D205
R222
Q206
R218
C207
D201
R207
Q204
C204
R213
R206
R211
Q201
C202
R201
C201
C205
CN903
C959
R977
Q958
D954
Q956
R976
Q957
R970
Q955
R969
Q954
R968
R963
R958
R959
Q952
R965
D955
D956
R966
R967
Q953
R954
R672
D654
R671
C660
R653
R654
R652
D659
R674
Q653
D651
Q651
Q652
Q654
R655
R656
Q655
R657
C954
IC951
C955
R670
R669
Q658
R955
R956
C953
R957
D963
R953
R960
C951
R952
Q951
R951
R675
R902
TH653
C659
C658
R678
R677
C662
R676
C661
R668
IC651
C654
C653
R666
C657
C656
R667
C655
C968
C969
Q970
R992
D958
C970
Q969
D957
C971
R993
L952
L951
C972
C973
C974
EF952
EF951
C975
R673
D658
TH651
TH901
Q115
Q116
R126
R127
R129
CN154
C112
Q112
Q104
R107
R118
Q106
R122
R114
D103
D102
C107
C115
R111
R106
R113
C104
D101
CN551
C215
C105
C101
R101
C102
R611
Q611
R612
Q612
Q613
C966
C965
C964
C967
D960
R994
R998
R997
R995
D959
D962
D961
C976
R996
CN153
R234
C213
C214
C114
C113
CN253
R134
Q657
R659
D652
R660
R661
R663
R662
Q656
D903
C903
C901
D902

Fig. 5

B AUDIO PCB

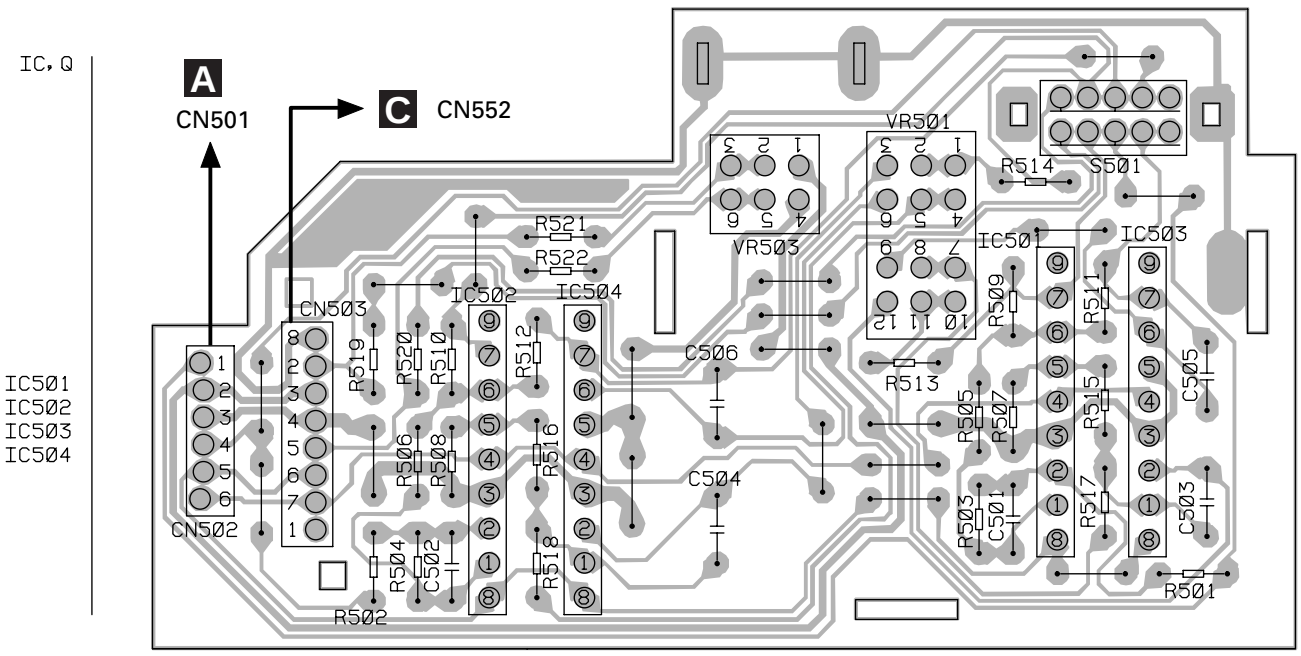


Fig. 6

C BASS PCB

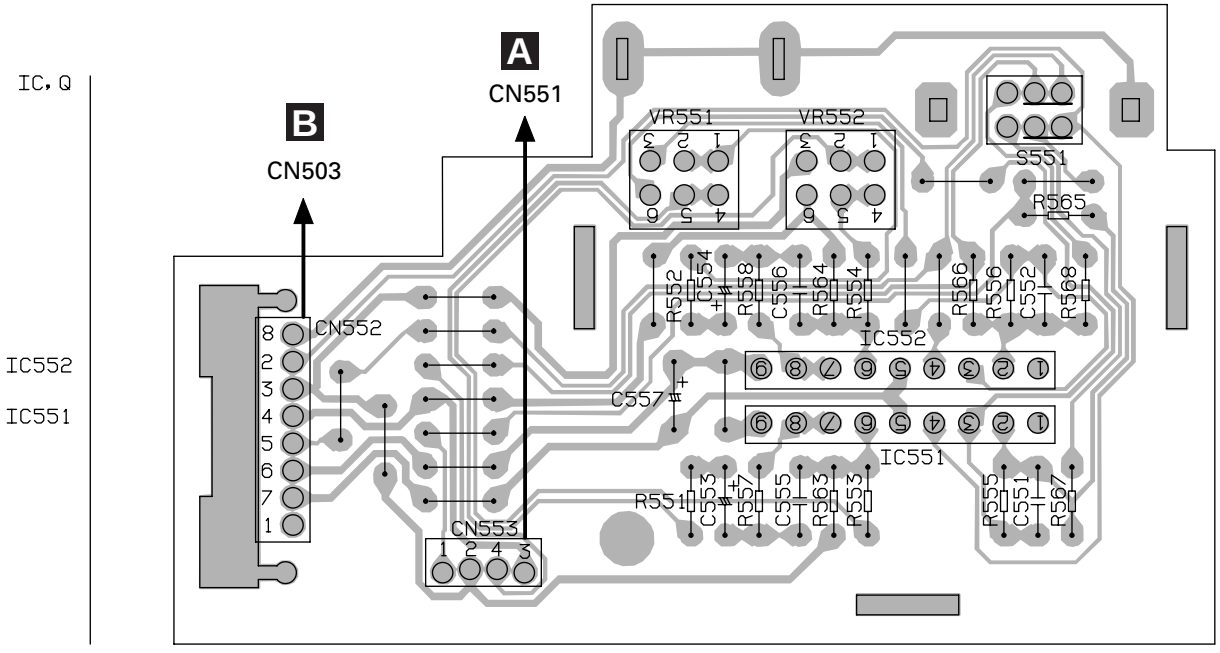


Fig. 7

5. ELECTRICAL PARTS LIST

NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/○S○○○J,RS1/○○S○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

AMP UNIT
Consists of
AMP PCB
AUDIO PCB
BASS PCB

A B C

Unit Number : HWH0075 (GM-X822/X1R/UC)
: HWH0076 (GM-X722/X1R/UC)
: HWH0074 (GM-X722/X1R/ES)
: HWH0073 (GM-X722/X1R/EW)
Unit Name : Amp Unit

MISCELLANEOUS

=====Circuit Symbol and No.	===	Part Name	Part No.
IC	501	IC	NJM2068S
IC	502	IC	NJM2068S
IC	503	IC	NJM2068S
IC	504	IC	NJM2068S
IC	551	IC	NJM2068S
IC	552	IC	NJM2068S
IC	651	IC	PA2027A
IC	801	IC	NJM2068S
IC	851	IC	NJM2068S
IC	852	IC	NJM2068S
IC	951	IC	UPC494C
Q	101	Transistor	2SK389
Q	102	Transistor	2SA992
Q	103	Transistor	2SA992
Q	104	Transistor	2SC1845
Q	105	Transistor	2SA992
Q	106	Transistor	2SC1845
Q	107	Transistor	2SC1568
Q	111	Transistor	2SC3421
Q	112	Transistor	2SA1358
Q	113	Transistor	2SC5099
Q	114	Transistor	2SC5099
Q	115	Transistor	2SA1907
Q	116	Transistor	2SA1907
Q	201	Transistor	2SK389
Q	202	Transistor	2SA992
Q	203	Transistor	2SA992
Q	204	Transistor	2SC1845
Q	205	Transistor	2SA992
Q	206	Transistor	2SC1845
Q	207	Transistor	2SC1568
Q	211	Transistor	2SC3421
Q	212	Transistor	2SA1358
Q	213	Transistor	2SC5099
Q	214	Transistor	2SC5099
Q	215	Transistor	2SA1907
Q	216	Transistor	2SA1907
Q	601	Transistor	2SD1768S
Q	602	Transistor	2SD1768S
Q	611	Transistor	2SC2458

=====Circuit Symbol and No.	===	Part Name	Part No.
Q	612	Transistor	2SC2458
Q	613	Transistor	DTA124ES
Q	651	Transistor	2SA1048
Q	652	Transistor	2SC2458
Q	653	Transistor	2SC2458
Q	654	Transistor	2SC2458
Q	655	Transistor	2SA1048
Q	656	Transistor	2SC2458
Q	657	Transistor	2SA1048
Q	658	Transistor	2SB1243
Q	951	Transistor	2SA1048
Q	952	Transistor	2SC2458
Q	953	Transistor	2SC2458
Q	954	Transistor	2SA1048
Q	955	Transistor	2SA1048
Q	956	Transistor	DTA124ES
Q	957	Transistor	2SC2458
Q	958	Transistor	2SD1864
Q	959	Transistor	2SD1919
Q	960	Transistor	2SD1919
Q	961	Transistor	2SB1277
Q	962	Transistor	2SB1277
Q	963	FET	IRFIZ44N
Q	964	FET	IRFIZ44N
Q	965	FET	IRFIZ44N
Q	966	FET	IRFIZ44N
Q	969	Transistor	2SB1566
Q	970	Transistor	2SD2395
D	101	Diode	HZS6L(B1)
D	102	Diode	1SS133
D	103	Diode	1SS133
D	201	Diode	HZS6L(B1)
D	202	Diode	1SS133
D	203	Diode	1SS133
D	601	Diode	1SS133
D	602	Diode	1SS133
D	651	Diode	1SS133
D	652	Diode	HZS7L(B2)
D	654	Diode	1SS133
D	658	Diode	1SS133
D	659	Diode	1SS133
D	901	Diode	RM4Z-LFK5
D	902	LED	See Conttast table(2)
D	903	LED	See Conttast table(2)
D	954	Diode	HZS12L(A3)
D	955	Diode	1SS133
D	956	Diode	1SS133
D	957	Diode	HZS16L(1)
D	958	Diode	HZS16L(1)
D	959	Diode	ERA92-02VH
D	960	Diode	ERA92-02VH
D	961	Diode	FML22S
D	962	Diode	FML22R
D	963	Diode	1SS133
L	851	Ferri-Inductor	CTF1007

Circuit Symbol and No.		Part Name	Part No.
L	852	Ferri-Inductor	CTF1007
L	901	Choke Coil 50mH	CTH1144
L	951	Choke Coil 200mH	CTH1211
L	952	Choke Coil 200mH	CTH1211
T	951	Transformer	CTT1081
TH	651	Thermistor	CCX1013
TH	652	Thermistor	CCX1013
TH	653	Thermistor	CCX1035
TH	901	Thermistor	CCX1027
S	501	Switch	CSH1029
VR	101	Semi-fixed 1.5kΩ(B)	CCP1314
VR	201	Semi-fixed 1.5kΩ(B)	CCP1314
VR	501	Variable Resistor 20kΩ(E)	CCS1266
VR	503	Variable Resistor 10kΩ(A)	CCS1265
VR	551	Variable Resistor 10kΩ(C)	CCS1268
VR	552	Variable Resistor 50kΩ(C)	See Conttast table(2)
VR	951	Semi-fixed 100kΩ(B)	CCP1325
EF	951	Capacitor	CCG-081
EF	952	Capacitor	CCG-081

RESISTORS

R	101		RD1/4PU223J
R	102		RD1/4PU101J
R	103		RD1/4PU471J
R	106		RD1/4PU472J
R	107		RD1/4PU222J
R	108		RD1/4PU101J
R	111		RD1/4PU561J
R	112		RD1/4PU333J
R	113		RD1/4PU273J
R	114		RD1/4PU432J
R	115		RD1/4PU390J
R	116		RD1/4PU512J
R	117		RD1/4PU222J
R	118		RD1/4PU221J
R	121		RD1/4PU470J
R	122		RD1/4PU470J
R	123		RD1/4PU221J
R	124		RD1/2PM100J
R	125		RD1/2PM100J
R	126		RD1/2PM100J
R	127		RD1/2PM100J
R	128	0.22Ω	CCN1071
R	129	0.22Ω	CCN1071
R	134		RD1/2PM100J
R	201		RD1/4PU223J
R	202		RD1/4PU101J
R	203		RD1/4PU471J
R	206		RD1/4PU472J
R	207		RD1/4PU222J
R	208		RD1/4PU101J
R	211		RD1/4PU561J
R	212		RD1/4PU333J
R	213		RD1/4PU273J
R	214		RD1/4PU432J
R	215		RD1/4PU390J
R	216		RD1/4PU512J
R	217		RD1/4PU222J
R	218		RD1/4PU221J
R	221		RD1/4PU470J
R	222		RD1/4PU470J
R	223		RD1/4PU221J
R	224		RD1/2PM100J
R	225		RD1/2PM100J
R	226		RD1/2PM100J
R	227		RD1/2PM100J

Circuit Symbol and No.		Part Name	Part No.
R	228	0.22Ω	CCN1071
R	229	0.22Ω	CCN1071
R	234		RD1/2PM100J
R	501		RD1/4PU103J
R	502		RD1/4PU103J
R	503		RD1/4PU103J
R	504		RD1/4PU103J
R	505		RD1/4PU103J
R	506		RD1/4PU103J
R	507		RD1/4PU472J
R	508		RD1/4PU472J
R	509		RD1/4PU103J
R	510		RD1/4PU103J
R	511		RD1/4PU103J
R	512		RD1/4PU103J
R	513		RD1/4PU123J
R	514		RD1/4PU123J
R	515		RD1/4PU562J
R	516		RD1/4PU562J
R	517		RD1/4PU123J
R	518		RD1/4PU123J
R	519		RD1/4PU222J
R	520		RD1/4PU222J
R	521		RD1/4PU121J
R	522		RD1/4PU121J
R	551		RD1/4PU331J
R	552		RD1/4PU331J
R	553		See Conttast table(2)
R	554		See Conttast table(2)
R	555		RD1/4PU182J
R	556		RD1/4PU182J
R	557		RD1/4PU221J
R	558		RD1/4PU221J
R	565		See Conttast table(2)
R	566		See Conttast table(2)
R	601		RD1/4PU124J
R	602		RD1/4PU124J
R	603		RD1/4PU124J
R	604		RD1/4PU124J
R	605		RD1/4PU473J
R	606		RD1/4PU473J
R	607		RD1/4PU473J
R	608		RD1/4PU473J
R	611		RD1/4PU103J
R	612		RD1/4PU103J
R	651		RD1/4PU104J
R	652		RD1/4PU822J
R	653		RD1/4PU472J
R	654		RD1/4PU222J
R	655		RD1/4PU472J
R	656		RD1/4PU472J
R	657		RD1/4PU221J
R	658		RD1/4PU102J
R	659		RD1/4PU473J
R	660		RD1/4PU103J
R	661		RD1/4PU103J
R	662		RD1/4PU222J
R	663		RD1/4PU472J
R	664		RD1/4PU272J
R	665		RD1/4PU272J
R	666		RD1/4PU103J
R	667		RD1/4PU472J
R	668		RD1/4PU473J
R	669		RD1/4PU221J
R	670		RD1/4PU152J

=====Circuit Symbol and No.		===Part Name	Part No.
R	671		RD1/4PU472J
R	672		RD1/4PU101J
R	673		RD1/4PU272J
R	674		RD1/4PU272J
R	675		RD1/4PU272J
R	676		RD1/4PU223J
R	677		RD1/4PU223J
R	678		RD1/4PU223J
R	801		RD1/4PU223J
R	802		RD1/4PU223J
R	803		RD1/4PU821J
R	804		RD1/4PU821J
R	807		RD1/4PU223J
R	808		RD1/4PU223J
R	810		RD1/4PU223J
R	851		RD1/4PU471J
R	852		RD1/4PU471J
R	853		RD1/4PU223J
R	854		RD1/4PU223J
R	855		RD1/4PU222J
R	856		RD1/4PU222J
R	857		RD1/4PU392J
R	858		RD1/4PU392J
R	859		RN1/4PC1002D
R	860		RN1/4PC1002D
R	861		RN1/4PC1002D
R	862		RN1/4PC1002D
R	863		RN1/4PC7501D
R	864		RN1/4PC7501D
R	865		RN1/4PC7501D
R	866		RN1/4PC7501D
R	902		RD1/4PU391J
R	951		RD1/4PU103J
R	952		RD1/4PU223J
R	953		RD1/4PU392J
R	954		RD1/4PU183J
R	956		RD1/4PU153J
R	957		RD1/4PU102J
R	958		RD1/4PU512J
R	959		RD1/4PU472J
R	960		RD1/4PU101J
R	963		RD1/4PU472J
R	964		RD1/4PU153J
R	965		RD1/4PU182J
R	966		RD1/4PU223J
R	967		RD1/4PU182J
R	968		RD1/4PU123J
R	969		RD1/4PU472J
R	970		RD1/4PU472J
R	971		RD1/4PU363J
R	972		RD1/4PU124J
R	973		RD1/4PU124J
R	976		RD1/4PU332J
R	977		RD1/4PU221J
R	978		RD1/4PU332J
R	979		RD1/4PU332J
R	980		RD1/4PU472J
R	981		RD1/4PU472J
R	982		RD1/4PU470J
R	983		RD1/4PU470J
R	984		RD1/4PU470J
R	985		RD1/4PU470J
R	988		RS1/2PMF220J
R	989		RS1/2PMF220J
R	992		RD1/4PU472J
R	993		RD1/4PU472J
R	994		RD1/4PU681J
R	995		RD1/4PU681J
R	996		RS1/2PMF220J
R	997		RD1/4PU681J
R	998		RD1/4PU681J

CAPACITORS

=====Circuit Symbol and No.		===Part Name	Part No.
C	101		CEAS100M16
C	102		CQPA221G2A
C	103		CQPA102G2A
C	104		CFTLA104J50
C	105		CEAS101M16
C	106		CMA150J2H
C	107		CFTLA104J50
C	108		CMA330J2H
C	109		CFTLA104J50
C	111		CMA101J2H
C	112		CMA101J2H
C	113		CFTLA333J50
C	114		CQPA102G2A
C	115		CQPA471G2A
C	201		CEAS100M16
C	202		CQPA221G2A
C	203		CQPA102G2A
C	204		CFTLA104J50
C	205		CEAS101M16
C	206		CMA150J2H
C	207		CFTLA104J50
C	208		CMA330J2H
C	209		CFTLA104J50
C	211		CMA101J2H
C	212		CMA101J2H
C	213		CFTLA333J50
C	214		CQPA102G2A
C	215		CQPA471G2A
C	501		CCPUSL470J50
C	502		CCPUSL470J50
C	503		CFTLA104J50
C	504		CFTLA104J50
C	505		CFTLA104J50
C	506		CFTLA104J50
C	551		CFTLA333J50
C	552		CFTLA333J50
C	553		CEAS4R7M50
C	554		CEAS4R7M50
C	555		CFTLA334J50
C	556		CFTLA334J50
C	557		CEAS220M50
C	651	220µF/10V	CCH1036
C	652		CFTLA103J50
C	653		CFTLA103J50
C	654		CEAS100M16
C	655		CEAS100M16
C	656		CEAS101M16
C	657		CFTLA103J50
C	659		CEAS220M50
C	660	470µF/16V	CCH1183
C	661		CFTLA103J50
C	662		CFTLA103J50
C	801		CQMA471J50
C	802		CQMA471J50
C	803		CEAS100M16
C	804		CEAS100M16
C	805		CCPUSL470J50
C	851		CQMA471J50
C	852		CQMA471J50
C	853		CEAS100M16
C	854		CEAS100M16
C	855		CFTLA103J50
C	856		CFTLA103J50
C	857		CCPUSL470J50
C	858		CCPUSL470J50

=====Circuit Symbol and No.		===Part Name	Part No.
C	859		CCPUSL470J50
C	860		CCPUSL470J50
C	901		CFTLA104J50
C	902		CFTLA224J50
C	903		CFTLA104J50
C	951		CEAS100M16
C	952		CEAS221M10
C	953		CQMAQ102J50
C	954		CFTLA105J50
C	955		CEAS101M16
C	956		CFTLA564J50
C	957		CFTLA564J50
C	959		CFTLA104J50
C	961		CFTLA273J50
C	962		CFTLA273J50

=====Circuit Symbol and No.		===Part Name	Part No.
C	963	4700µF/16V	CCH1310
C	964		CEAS332M35
C	965		CEAS332M35
C	966		CEAS332M35
C	967		CEAS332M35
C	970		CEAS470M16
C	971		CEAS470M16
C	972		CEAS101M16
C	973		CEAS101M16
C	974		CEAS331M50
C	975		CEAS331M50
C	976		CQMAQ102J50
C	977	4700µF/16V	CCH1310

(2) CONTRAST TABLE

GM-X822/X1R/UC, GM-X722/X1R/UC, GM-X722/X1R/ES and GM-X722/X1R/EW are constructed the same except for the following:

Symbol and Description		Part No.			
		GM-X822	GM-X722		
		X1R/UC	X1R/UC	X1R/ES	X1R/EW
D902,903	LED	NSPWF50S(AQ)	NSPWF50S(VQ)	NSPWF50S(VQ)	NSPWF50S(VQ)
S551	Switch	Not used	Not used	CSH1021	CSH1021
S951	Switch	Not used	Not used	HSH-156	HSH-156
VR552	Variable Resistor 50kΩ(C)	CCS1263	Not used	CCS1263	CCS1263
R553,554		RD1/4PU822J	Not used	RD1/4PU822J	RD1/4PU822J
R563,564		Not used	RD1/4PU333J	Not used	Not used
R565,566		RD1/4PU222J	RD1/4PU222J	Not used	Not used
R567,568		Not used	Not used	RD1/4PU222J	RD1/4PU222J
R955		Not used	Not used	RD1/4PU105J	RD1/4PU105J

6. ADJUSTMENT

No.	Item	Conditions	Adjustment point	Specifications
1	Idling current (adjustment)	Input ; adjust 30 seconds after 1kΩ terminate power is switched on, and within 20 seconds.	VR101(Lch) VR201(Rch)	mV Meter(1) : 12mV±3mV
2	DC-DC converter voltage (adjustment)	Input ; adjust 30 seconds after 1kΩ terminate power is switched on, and within 20 seconds.	VR951	mV Meter(2) : 30V±3V

● Connection Diagram

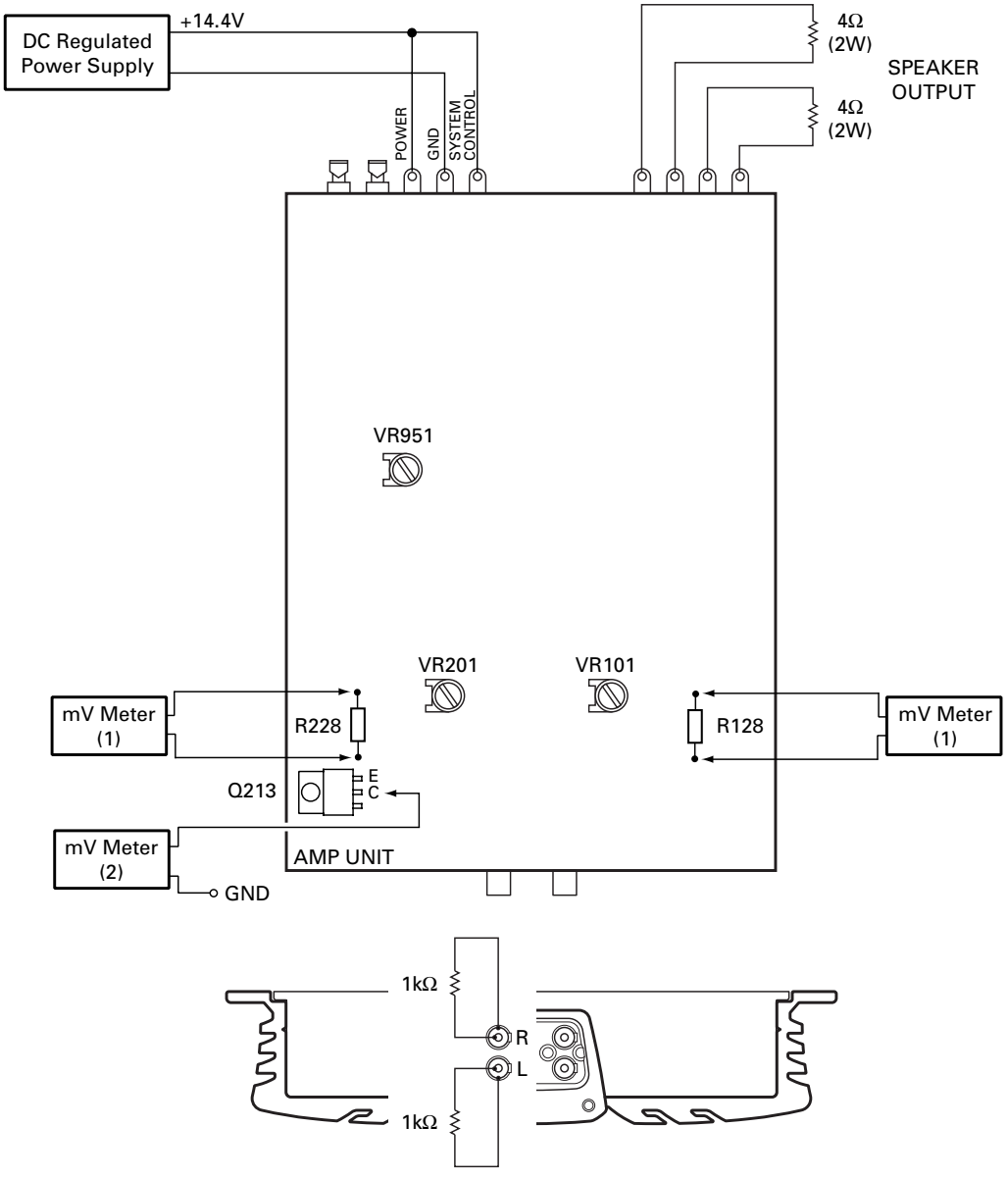
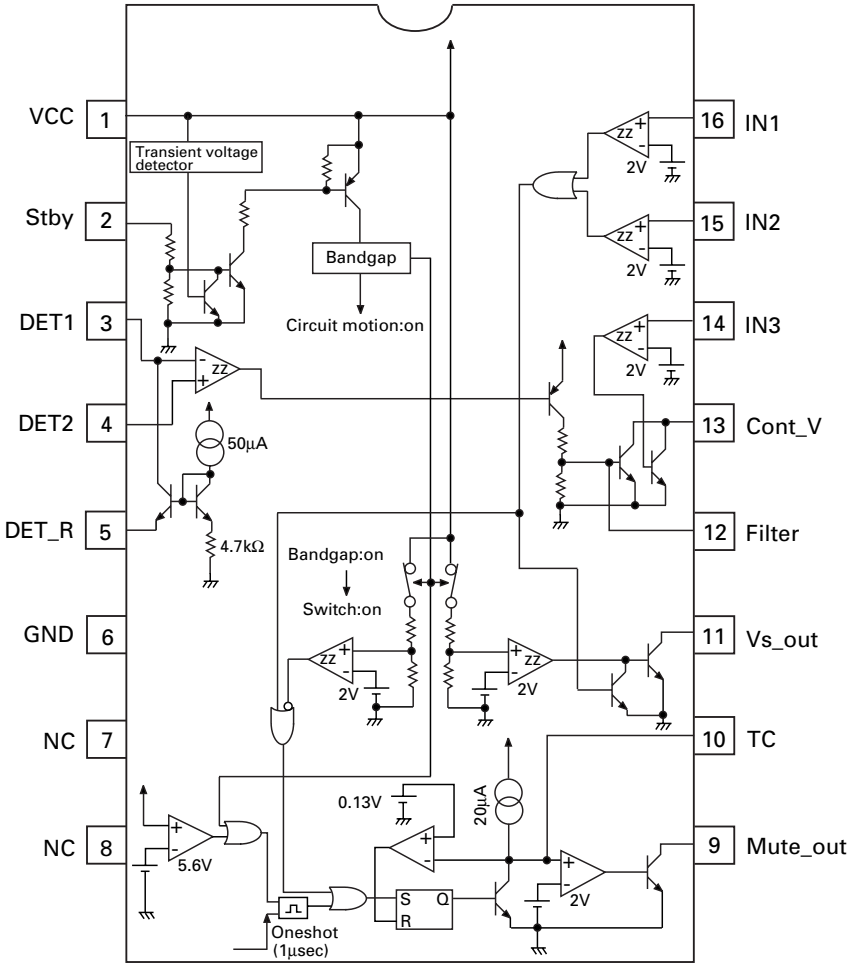


Fig. 8

7. GENERAL INFORMATION

7.1 IC

PA2027A



7.2 DISASSEMBLY

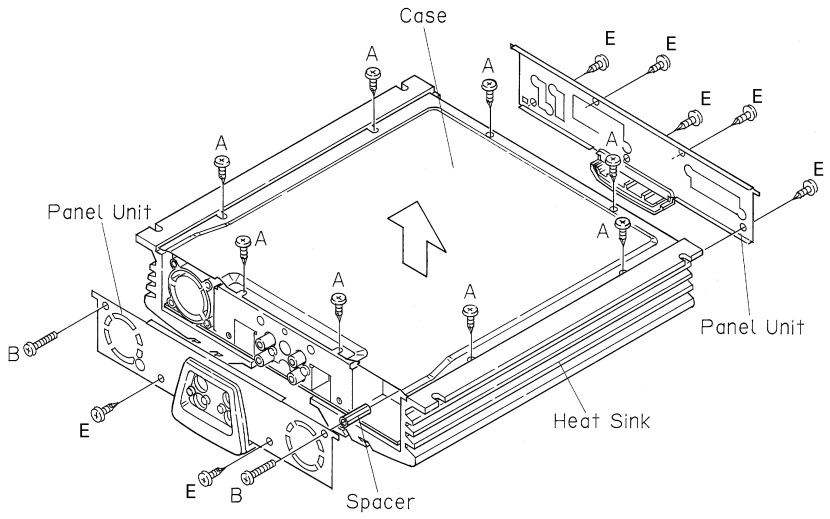


Fig. 9

● **Removing the Case and Panel Units**

1. Remove eight screws A and then remove Case.
2. Remove two screws B and seven screws E and then remove Panel Units.

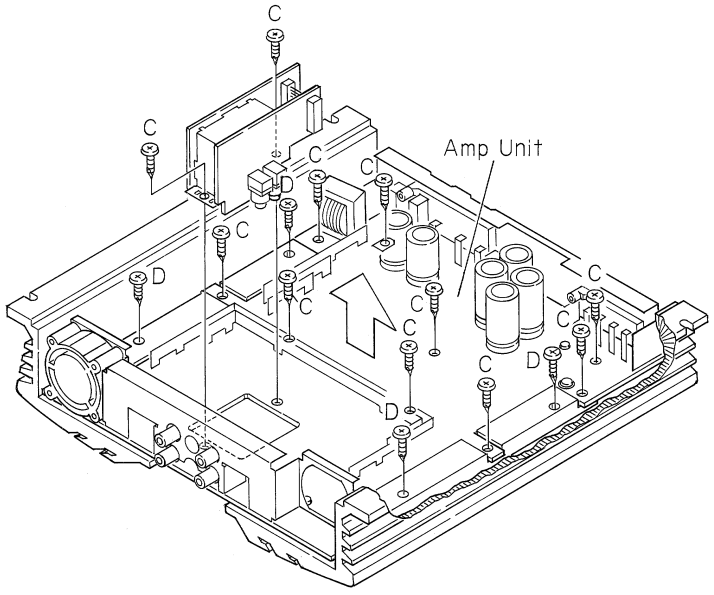


Fig. 10

● **Removing the Amp Unit**

1. Remove eleven screws C.
2. Remove four screws D.
3. Remove Amp Unit.

7.3 BLOCK DIAGRAM

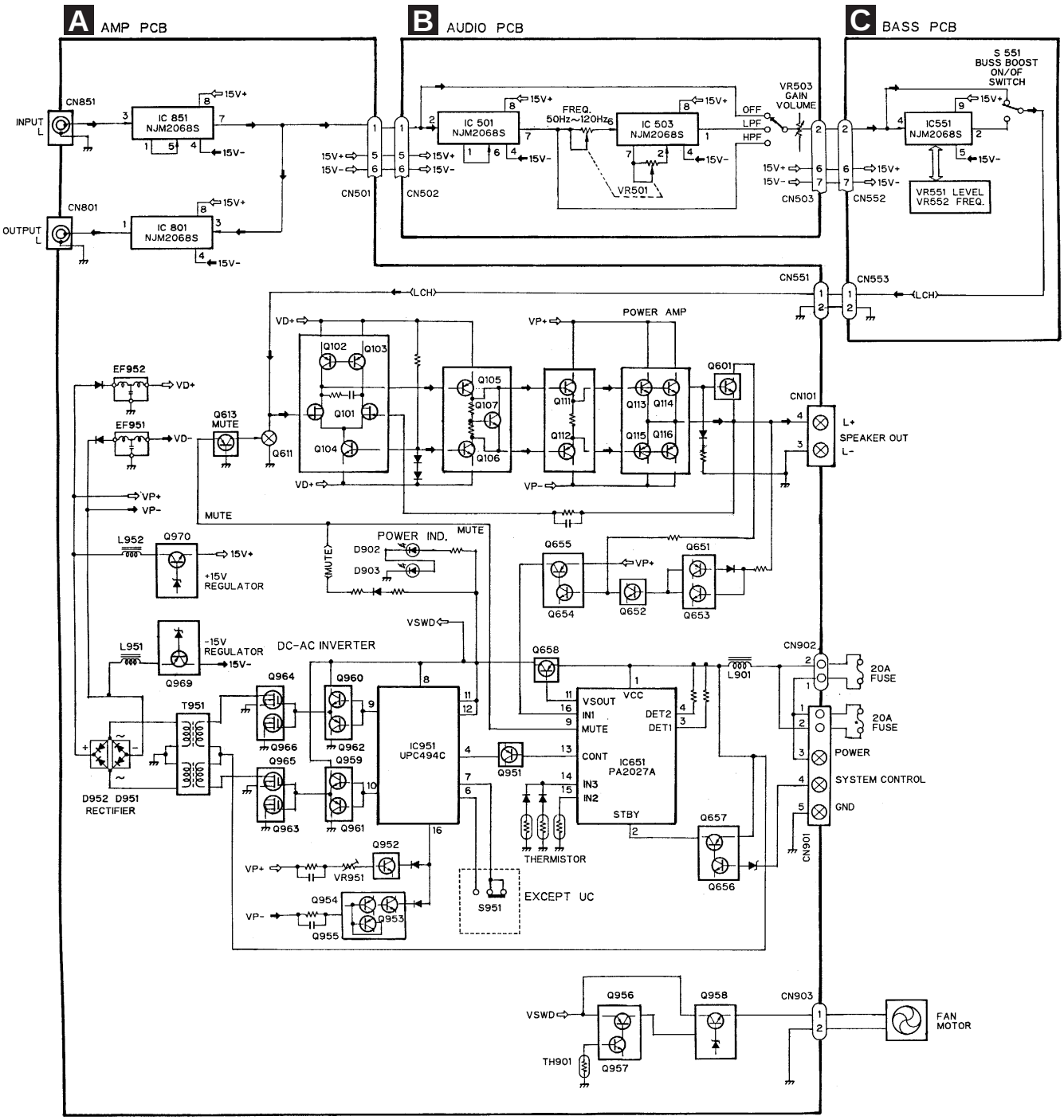


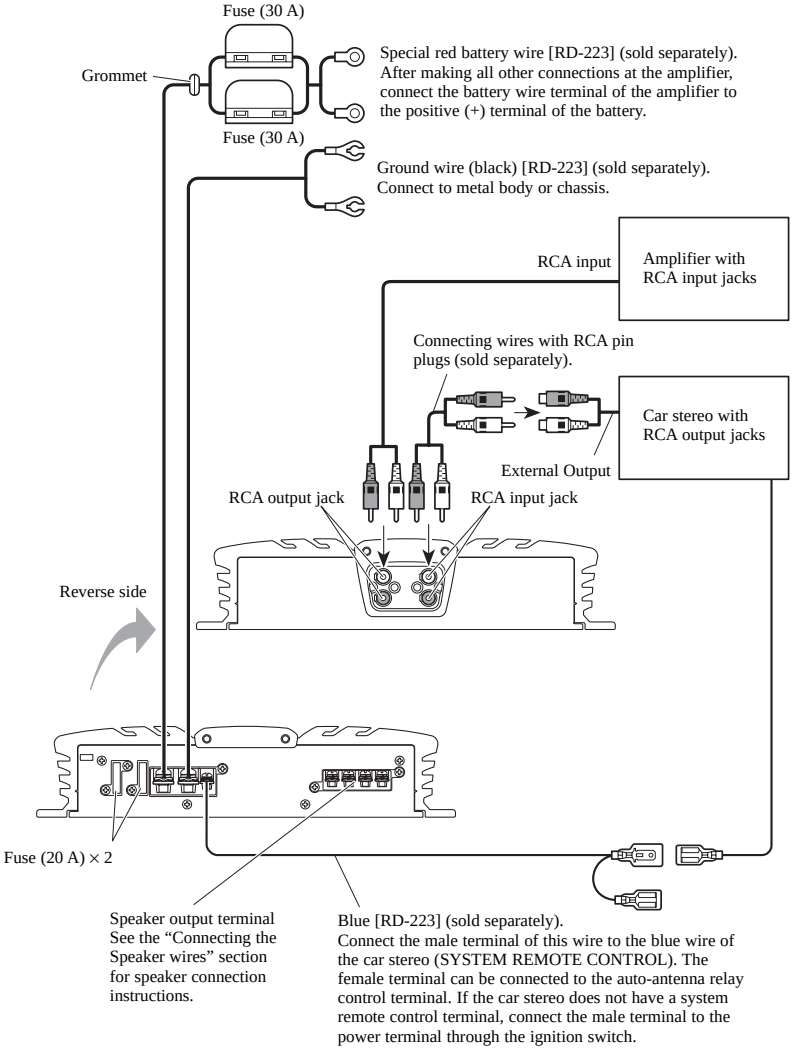
Fig. 11

8. OPERATIONS AND SPECIFICATIONS

● CONNECTION DIAGRAM

(1) GM-X822/X1R/UC

Connection Diagram


Fuse (30 A)
Grommet
Special red battery wire [RD-223] (sold separately). After making all other connections at the amplifier, connect the battery wire terminal of the amplifier to the positive (+) terminal of the battery.
Fuse (30 A)
Ground wire (black) [RD-223] (sold separately). Connect to metal body or chassis.
RCA input
Amplifier with RCA input jacks
Connecting wires with RCA pin plugs (sold separately).
Car stereo with RCA output jacks
External Output
RCA output jack
RCA input jack
Reverse side
Fuse (20 A) × 2
Speaker output terminal See the "Connecting the Speaker wires" section for speaker connection instructions.
Blue [RD-223] (sold separately). Connect the male terminal of this wire to the blue wire of the car stereo (SYSTEM REMOTE CONTROL). The female terminal can be connected to the auto-antenna relay control terminal. If the car stereo does not have a system remote control terminal, connect the male terminal to the power terminal through the ignition switch.

Setting the Unit

Gain Control

If the sound level is too low, even when the volume of the car stereo used along with this power amplifier is turned up, turn gain control on the back of the power amplifier clockwise. If the sound distorts when the volume is turned up, turn the gain control counter-clockwise.

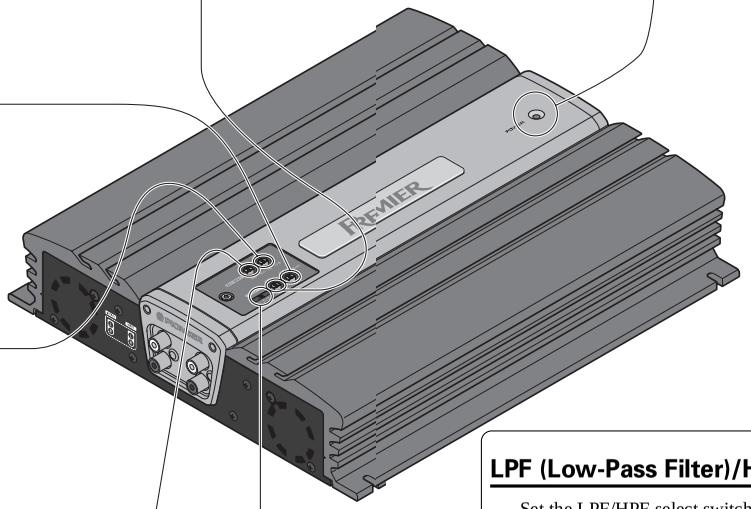
- Set the gain control to “NORMAL” when this amplifier is connected to a Pioneer car stereo with RCA output jacks. If the sound level is too low or distorts, adjust the gain control.
- Adjust the gain control to the “MIN” side of “NORMAL” when this amplifier is connected to a Pioneer car stereo (High voltage output type).

Cut Off Frequency Control

If the LPF (LPF/HPF) select switch is set to LPF (or HPF), you can select a cut off frequency from 50 to 120Hz.

Power Indicator

The power indicator lights when the power is switched on.



Bass Boost Level Control

Bass boost level control can boost the level around the frequency selected by the bass boost frequency control from 0 to 12 dB.

LPF (Low-Pass Filter)/HPF (High-Pass Filter) Select Switch

Set the LPF/HPF select switch as follows according to the type of speaer that is connected to the speaker output connector and the car stereo sytem:

LPF/HPF Select Switch	Audio frequency range to be output	Speaker Type	Remarks
LPF (left)	* — 50 to 120 Hz	Sub-woofer	Connect a sub-woofer.
OFF (center)	Full range	Full range	
HPF (right)	* 50 to 120 Hz —	Full range	Use if you want to cut the very-low-frequency range* because it is not necessary for the speakers you are using.

* See the “Cut Off Frequency Control” section.

Bass Boost Frequency Control

You can select a bass boost frequency from 40 to 120 Hz with the bass boost control.

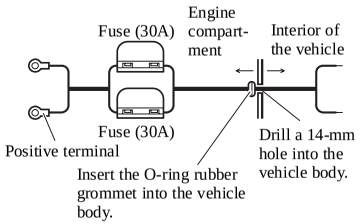
- Bass Boost Level Control and Bass Boost Frequency Control can be adjusted only when the LPF/HPF select switch is set to a position other than HPF .

Connecting the PowerTerminal

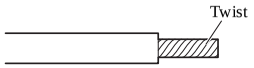
- Always use the special red battery and ground wire [RD-223], which is sold separately. Connect the battery wire directly to the car battery positive terminal (+) and the ground wire to the car body.

1. Pass the battery wire from the engine compartment to the interior of the vehicle.

- After making all other connections to the amplifier, connect the battery wire terminal of the amplifier to the positive (+) terminal of the battery.

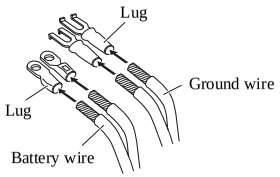

Fuse (30A)
Engine compart-ment
Interior of the vehicle
Fuse (30A)
Positive terminal
Drill a 14-mm hole into the vehicle body.
Insert the O-ring rubber grommet into the vehicle body.

2. Twist the battery wire, ground wire and system remote control wire.



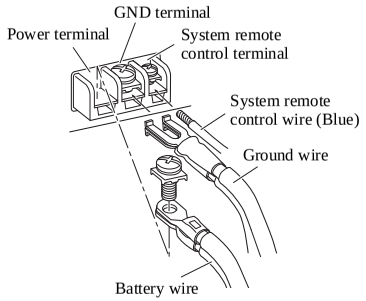
3. Attach lugs to wire ends. Lugs not supplied.

- Use pliers, etc., to crimp lugs to wires.



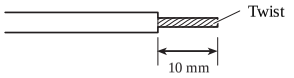
4. Connect the wires to the terminal.

- Fix the wires securely with the terminal screws.



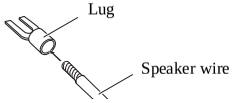
Connecting the Speaker Output Terminals

1. Expose the end of the speaker wires by about 10 mm and twist using nippers or a cutter.



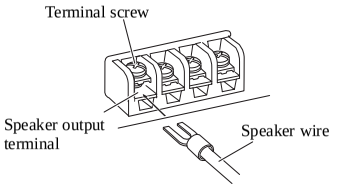
2. Attach lugs to speaker wire ends. Lugs not supplied.

- Use pliers, etc., to crimp lugs to wires.



3. Connect the speaker wires to the speaker output terminals.

- Fix the speaker wires securely with the terminal screws.

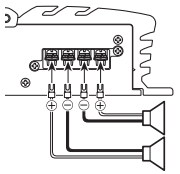


Connecting the Speaker wires

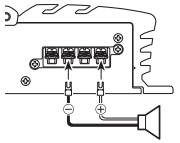
The speaker output mode can be two-channel (stereo), one-channel (mono), or three-channel (stereo + mono). Connect the speaker leads to suit the mode according to figures on the following pages.

- When connecting to the speaker input, do not connect the RCA output.
- When connecting to the RCA input, do not connect the speaker input.

Two-channel mode (stereo)



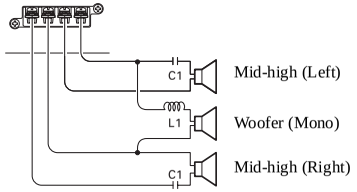
One-channel mode (mono)



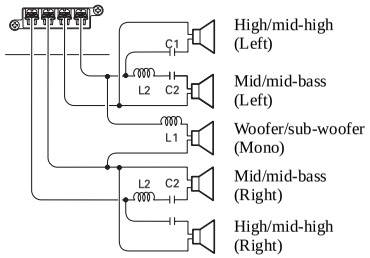
Three-channel mode (stereo + mono)

The power amplifier is basically a two-channel/one-channel bridgeable amplifier, but three channels can be achieved by combining the stereo and mono modes using inductors and capacitors.

Three-channel mode, two-way system



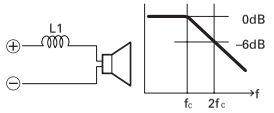
Three-channel mode, three-way system



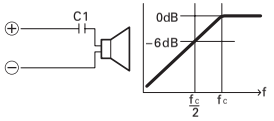
- Inductors (L1 and L2 in the diagrams) act as low-pass filters. Capacitors (C1 and C2 in the diagrams) act as high-pass filters. Inductors (L) are used for the woofer/sub-woofer, and capacitors (C) are used for the high/mid-high.
- Remember when bridging an amplifier it will see only half of the original speaker impedance. Therefore, you must use speakers that have ratings of 4 ohms or higher. If you use speakers that have lower impedance ratings it may cause damage to the amplifier.
- When the inductors and capacitors are connected to the speaker wires, secure or solder them so they cannot be pulled loose. Tape or use heat shrink on the joints to prevent short circuits.

Setting the Filter Constant

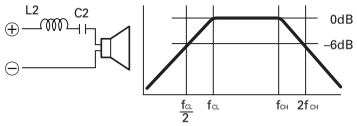
Low-pass filter (for sub-woofer/woofer): 6 dB/octave



High-pass filter (for mid/mid-high): 6 dB/octave



Band-pass filter (combination of low-pass filter and high-pass filter for mid-bass/mid): 6 dB/octave



- A multi-channel system can be set up using a combination of filters. The inductance (L) and capacitance (C) will determine the frequency (fc) that the speaker will reproduce. Refer to the chart below to determine the components required.
- Use the capacitors specified. Non-polarized capacitors rated at over ±25 V should be used for C1 and C2 in the diagram. Because of the voltage output of the amplifier, it is very important to use non-polarized capacitors rated at or over 25 V. This will prevent a safety hazard.

Component Guide

Speaker load Impedance	2 Ω		4 Ω		8 Ω	
fc (Hz)	L (mH)	C (µF)	L (mH)	C (µF)	L (mH)	C (µF)
50	6.4	1,600	12.7	800	25.5	400
80	4.0	1,000	8.0	500	16.0	250
125	2.5	640	5.1	300	10.0	160
200	1.6	400	3.2	200	6.4	100
320	1.0	250	2.0	125	4.0	62
500	0.64	160	1.3	80	2.6	40
800	0.4	100	0.8	50	1.6	25
1,250	0.25	64	0.5	30	1.0	16
2,000	0.16	40	0.3	20	0.64	10
3,200	0.1	25	0.2	12.5	0.4	6.2
5,000	0.06	16	0.13	8	0.26	4
8,000	0.04	10	0.08	5	0.16	2.5
10,000	0.03	8	0.06	4	0.13	2

SPECIFICATIONS

Power source	14.4 V DC (10.8 — 15.1 V allowable)
Grounding system	Negative type
Current consumption	22.5 A (at continuous power, 4 Ω)
Average current drawn*	6.5 A (4 Ω for two channels)
	11.3 A (4 Ω for one channel)
Fuse	20 A × 2
Dimensions	255 (W) × 61 (H) × 260 (D) mm
	[10 (W) × 2-3/8 (H) × 10-1/4 (D) in.]
Weight	3.4 kg (7.5 lbs.) (Leads for wiring not included)
Maximum power output	160 W × 2 / 480 W × 1 (EIAJ)
Continuous power output	80 W × 2 (at 14.4V, 4 Ω, 20 — 20,000 Hz, 0.04% THD)
	240 W × 1 (at 14.4V, 4 Ω, 20 — 20,000 Hz, 0.4% THD)
	120 W × 2 (at 14.4V, 2 Ω, 20 — 20,000 Hz, 0.4% THD)
Load impedance	4 Ω (1 — 8 Ω allowable)
	(Bridge connection: 2 — 8 Ω allowable)
Frequency response	10 — 50,000 Hz (+0 dB, –1 dB)
Signal-to-noise ratio	102 dB (IHF–A network)
Distortion	0.004% (10 W, 1 kHz)
Separation	70 dB (1 kHz)
Low pass filter	Cut off frequency: 50 — 120 Hz
	Cut off slope: –12 dB/oct
High pass filter	Cut off frequency: 50 — 120 Hz
	Cut off slope: –12 dB/oct
Bass boost (GM-X822)	Frequency: 40 — 120 Hz
	Gain: 0 — 12 dB
Bass boost (GM-X722)	Frequency: 60 Hz
	Gain: 0 — 12 dB
Input level / impedance	0.4 — 6.5 V/22 kΩ

Note:

- Specifications and the design are subject to possible modification without notice due to improvements.

***Average current drawn**

- The average current drawn is nearly the maximum current drawn by this unit when an audio signal is input. Use this value when working out total current drawn by multiple power amplifiers.